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H2A

Selected US specifications from IPC sub-class H02K

(54) Electric motor with a bracket for its mounting

(57) In an electric motor with a cover lid (3), a bracket (4) for mounting the electric motor straddles said cover lid (3) and formed by a strip-shaped plate metal blank bent to roughly U-shape. The bracket is coupled to the cover lid (3) by block-shaped elements (7, 8) of high-elasticity material, for the purpose of noise abatement. The elastic elements (7, 8) may be cemented to lugs (9, 10), on one side, and to ends (5, 6) of the bracket (4), on the other side, or, else, vulcanised to these elements (9, 10, 5, 6). The bracket (4) is provided with bores (28, 29) for the purpose of fixation of the electric motor (2) to a frame element or to another support and is, in addition, formed with a recess (35) in its central section for an output shaft (27) of the electric motor (2) to pass through it. The recess (35) is sized such that the electric motor (2) is allowed to perform swivelling motions in any direction, without the output shaft (27) coming into contact with the bracket (4).

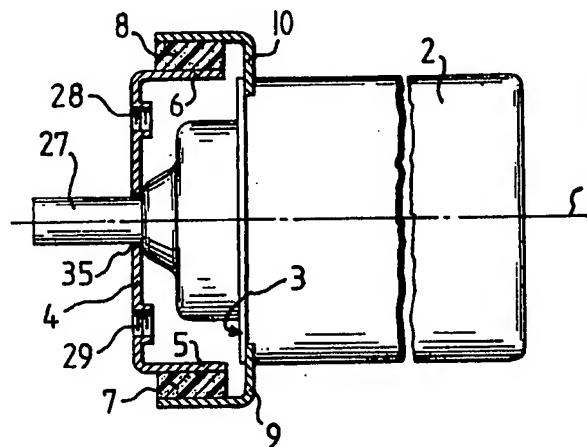


FIG. 1

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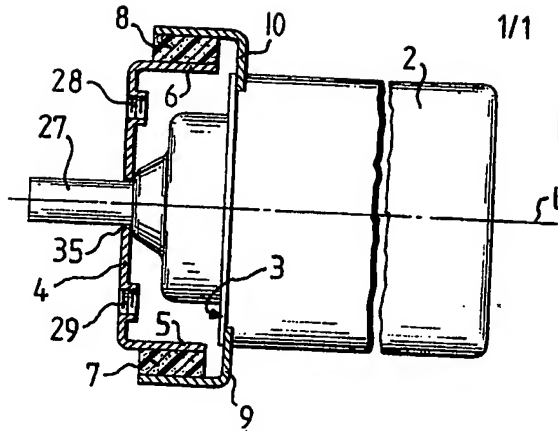


FIG. 1

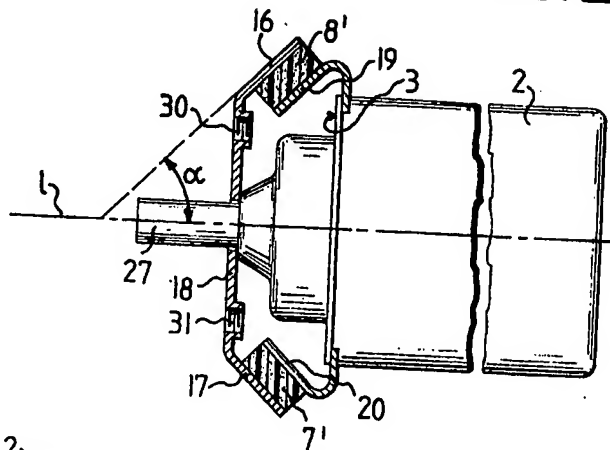


FIG. 2

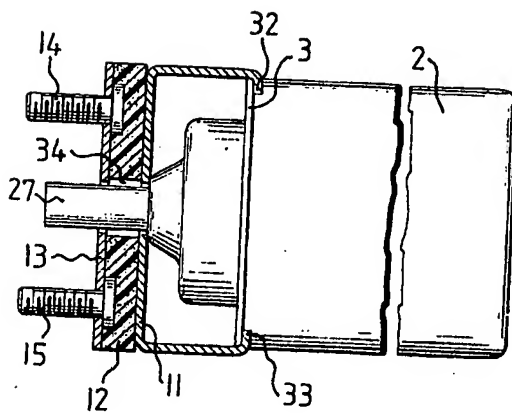


FIG. 3

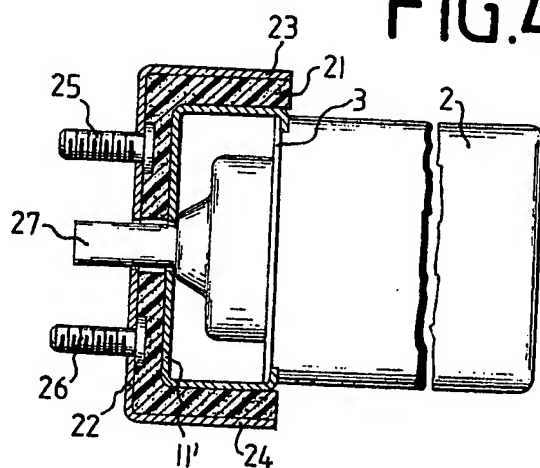


FIG. 4

SPECIFICATION

Electric motor with a bracket for its mounting

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This invention relates to an electric motor with a cover lid arranged at one end thereof and with a bracket straddling said cover lid externally and being constituted by a strip-shaped plate metal blank bent to a roughly U-shape and coupled to the cover lid for mounting of the electric motor.

It is known in the prior art to secure electric motors, for example motors to drive wind-screen wipers or for the adjustment of vehicle seats, to a frame element or to any other support by means of a collar which surrounds part of the cylindrical housing of the electric motor and is secured, with its ends, to the support. Furthermore, it is known in the prior art to provide a cover lid arranged at the one end of the housing of the electric motor with a holding arm or a holding bracket which is then bolted, in its turn, to the support. This prior-art device has, however, the disadvantage that the motor transmits the vibrations generated by it during operation to the support practically without damping.

The present invention has as an object to furnish an electric motor with a mounting bracket which largely eliminates the vibrations generated by the electric motor, which is particularly inexpensive in manufacture and which allows the motor to be mounted quickly and easily to the support. Finally, the mounting bracket is to present such a configuration as to render the electric motor movable within narrow limits, in all directions.

According to the present invention there is provided an electric motor with a cover lid arranged at one end thereof and with a bracket straddling said cover lid externally and constituted by a strip-shaped plate metal blank bent to a roughly U-shape and coupled to said cover lid for mounting of the electric motor, characterised in that one or more block-shaped or strip-shaped elements of a high elasticity material are secured to the bracket and serve to prevent the transmission of vibration generated by the electric motor to a support to which the motor is mounted as well as permitting movement of the motor relative to the support.

In one type of embodiment the bracket is provided, at its two ends bent off in the direction of the motor, with block-shaped elements of said high-elasticity material which are, on their part, secured to L-shaped lugs being part of the cover lid or being bolted, riveted or lock-formed to it, said block-shaped elements being cemented to the lugs, on one side, and to the ends of the bracket, on the other side, or, else, being vulcanised to these elements.

In another type of embodiment, the central

section of the bracket which is arranged in a plane approximately parallel to the plane of the cover lid is provided, on its side facing away from the electric motor, with one or several block-shaped or strip-shaped elements of said high-elasticity material which are, on their part, firmly secured to a strip-shaped plate metal blank which is arranged approximately parallel to the central section of the bracket and is furnished with openings, bolts or similar means for fixation of the electric motor to an element supporting the assembly and comprising said support.

Each of the two ends of the bracket which are bent off in the direction of the motor preferably forms an angle of about 45° with the longitudinal axis of the motor, the projecting ends of the lugs rigidly coupled to the motor being each arranged parallel to the ends of the bracket.

Advantageously, one or several block-shaped or strip-shaped elements of said high-elasticity material are positioned on that side of the bracket bent to roughly U-shape which faces away from the electric motor, a second bracket with an approximately U-shaped configuration being provided which is formed from a strip-shaped plate metal blank and is furnished with openings or bolts for fixation to an element supporting the assembly and comprising said support and is firmly secured to the block-shaped or strip-shaped elements with its inner sides facing each other of its bracket ends and with the motor-facing side of its central section.

In order to ease fixation of the electric motor, the central portion of the bracket and that of the strip-shaped plate metal blank secured to the elastic elements are formed with a bore or a recess for a motor shaft to project through it.

Expediently, the bracket coupled, through the block-shaped elements, to the lugs stationarily arranged at the motor is furnished, in this context, with openings or bores for the fixation of the assembly to a frame or to a supporting wall comprising said support.

Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 shows an electric motor with an output shaft and a bracket for holding the electric motor with elastic elements, said bracket being bent to U-shape and shown in cross-section;

Figure 2 shows an embodiment with a bracket whose two ends are arranged at an acute angle relative to the longitudinal axis of the electric motor and are coupled, through block-shaped elastic elements, to lugs fixed to the electric motor;

Figure 3 shows an embodiment with a bracket whose ends, which are bent off, are fixed to the electric motor, the central portion of the bracket being coupled, through an elas-

tic element, to a strip-shaped plate metal blank which is, in its turn, bolted to the support for the assembly; and

- Figure 4 shows an embodiment with a
 5 bracket whose entire lateral surface facing away from the electric motor is firmly secured to a strip-shaped elastic element which is, on its part, cemented to the surface facing the electric motor of a second, larger bracket.
 10 In the embodiment of Figure 1, at its front end (front side) electric motor 2 presents a cover lid 3 to which two lugs 9, 10 are fastened which are bent to an L-shape and positioned diametrically opposite each other and
 15 whose radially inwardly facing lateral surfaces are each provided with a block-shaped element 7, 8 of high-elasticity material. A bracket 4 bent to a U-shape and made from a strip-shaped plate metal blank is arranged such that
 20 its one lateral surface extends in a plane running parallel to the plane of the cover lid 3. The two ends 5, 6 of the bracket 4 which are bent off at right angles are firmly secured to the lateral surfaces facing each other of the
 25 elastic elements 7, 8. The central portion of the bracket 4 is formed with an opening through which output shaft 27 of the motor 2 extends. Two further openings or bores 28, 29 allow the bracket 4 to be fastened to a
 30 carrier element (not shown) for the assembly, for example to the frame of a vehicle seat, with the aid of screws or bolts. Mounting of the electric motor 2 with the aid of the bracket 4 offers the great advantage that the
 35 running noise of the electric motor and its vibrations will almost completely be kept away from the element supporting the assembly (that is to say, for example, from the seat frame). Beyond this, the electric motor can be
 40 mounted with particular ease and quickness, as two screws or bolts only are envisaged for the purpose. The elastic elements 7, 8 arranged between the two bracket ends 5, 6 on one side, and the ends of the lugs 9, 10, on
 45 the other side, will allow the electric motor 2 to perform minor rotary motions both about its longitudinal axis 1 and about an axis extending at right angles to said longitudinal axis 1 and to swivel about these axes. Slight
 50 motions of the electric motor 2 in the direction of its longitudinal axis 1 will be possible as well.

The embodiment of Figure 2 is distinguished from that in Figure 1 in that both the ends of the lugs 19, 20 and the bracket ends 16, 17
 55 are not bent off at right angles but in such a configuration instead that each of them forms an angle α of about 45° with respect to the longitudinal axis 1 of the electric motor 2.

- 60 In the instance of the electric motor according to Figure 3, a bracket 11 having a U-shaped configuration is envisaged whose ends 32, 33 bent off inwardly are rigidly coupled directly to the cover lid 3 of the electric
 65 motor 2. The bracket 11 is formed from a strip-

- shaped plate metal blank and is furnished, on its lateral surface facing away from the electric motor, with a strip-shaped or bar shaped elastic element 12 which is, in its turn, firmly
 70 cemented to a strip-shaped plate metal blank 13. The bar-shaped element 12 which is cemented to the two elements 11 and 13 is formed with a bore 34 in its central region for the output shaft 27 to pass through it. The
 75 bracket 11 and the strip-shaped blank are also provided with openings or bores in their central portions, which openings or bores are aligned with the bore 34 and through which the output shaft 27 projects. The strip-shaped
 80 plate metal blank 13 which serves as a carrier or fixation element presents two screw bolts 14, 15 for the purpose of fixing the plate metal blank 13 and thereby the whole assembly to a frame (not shown in the drawing) or to any other carrier wall or support.
 85

- The embodiment of Figure 4 differs from that in Figure 3 in that instead of a strip-shaped plane plate metal blank, an external bracket 22 bent to a U-shape is coupled,
 90 through an elastic element 21 which, too, has a U-shaped configuration, to the bracket 11'. The external bracket 22 bent to U-shape is sized such in this context that it surrounds the internal bracket 11', the distance at which
 95 both brackets are located from each other being equal both at the lateral portions of the brackets or bracket ends 23, 24 and at their central portions. The external bracket 22 bent to a U-shape is furnished with screw bolts
 100 25, 26 which serve to fix the assembly to a supporting wall or a supporting frame (not shown). Both the external and the internal brackets 22 and 11', respectively are each formed with a bore in their central portions
 105 through which the output shaft 27 of the electric motor 2 is passed, said bores being sized such that the output shaft 27 will not contact the brackets 11', 22 or the U-shaped elastic element 21 even in the event of swivelling
 110 motions performed by the electric motor 2 relative to the external bracket 22.

CLAIMS

1. An electric motor with a cover lid (3)
 115 arranged at one end thereof and with a bracket (4) straddling said cover lid (3) externally and constituted by a strip-shaped plate metal blank bent to a roughly U-shape and coupled to said cover lid (3) for mounting of
 120 the electric motor (2), characterised in that one or more block-shaped or strip-shaped elements of a high elasticity material are secured to the bracket and serve to prevent the transmission of vibration generated by the
 125 electric motor to a support to which the motor is mounted as well as permitting movement of the motor relative to the support.
 2. An electric motor as claimed in claim 1, characterised in that the said bracket (4) is
 130 provided, at its two ends (5, 6) bent off in

the direction of the motor, with block-shaped elements (7, 8) of said high-elasticity material which are, on their part, secured to L-shaped lugs (9, 10) being part of the said cover lid (3) or being bolted, riveted or lock-formed to it, said block-shaped elements (7, 8) being cemented to the said lugs (9, 10), on one side, and to the said ends (5, 6) of the said bracket (4), on the other side, or, else, being vulcanised to said elements (9, 10, 5, 6).

3. An electric motor as claimed in claim 1, characterised in that a central section of the said bracket (11) which is arranged in a plane approximately parallel to the plane of the said cover lid (3) is provided, on its side facing away from the electric motor (2), with one or several block-shaped or strip-shaped elements (12) of said high-elasticity material which are, on their part, firmly secured to a strip-shaped plate metal blank (13) which is arranged approximately parallel to the said central section of the said bracket (11) and is furnished with openings, bolts (14, 15) or similar means for fixation of the electric motor (2) to an element supporting the assembly and comprising said support.

4. An electric motor as claimed in claim 2, characterised in that each of the said ends (16, 17) of the said bracket (18) which are bent off in the direction of the motor (2) forms an angle (α) of about 45° with the longitudinal axis of the motor (2), the projecting ends of the said lugs (19, 20) rigidly coupled to the motor (2) being each arranged parallel to the said ends (16, 17) of the said bracket (18).

5. An electric motor as claimed in claim 3, characterised in that one or several said block-shaped or strip-shaped elements (21) of said high-elasticity material are positioned on that side of the said bracket (11) bent to roughly U-shape which faces away from the electric motor (2), a second said bracket (22) with an approximately U-shaped configuration being provided which is formed from a strip-shaped plate metal blank and is furnished with said openings or bolts (25, 26) for fixation to an element supporting the assembly and comprising said support, and is firmly secured to the said block-shaped or strip-shaped elements (21) with its inner sides facing each other of its said bracket ends (23, 24) and with the motor-facing side of its said central section.

6. An electric motor as claimed in claim 3, characterised in that the said central section of said bracket (4, 18, 11, 11') and that of the said strip-shaped plate metal blank (13) secured to said elastic elements (12) are formed with a bore or recess (34) for a motor shaft (27) to project through it.

7. An electric motor as claimed in claim 2, characterised in that the said bracket (4, 18) coupled, through said block-shaped elastic elements (7, 8 and 7', 8', respectively), to the said lugs (9, 10 and 19, 20, respectively) stationarily arranged at the electric motor (2) is

furnished with openings or bores (28, 29 and 30, 31, respectively) for the fixation of the assembly to a frame or to a supporting wall comprising said support.

70 8. An electric motor substantially as herein described with reference to and as illustrated in Figure 1, Figure 2, Figure 3 or Figure 4 of the accompanying drawings.

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